

## **PLAUDITUS GRANDIS (EPHEMEROPTERA: BAETIDAE), A NEW SMALL MINNOW MAYFLY FROM TENNESSEE<sup>1</sup>**

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**ABSTRACT:** *Plauditus grandis* new species, is described from adult males and larvae collected from Tennessee. The larvae of *P. grandis* are distinguished from all other North American two-tailed baetids by their large size, distinctive leg setation, narrow labial palpi, tergal patterning, mandibular morphology, absence of hindwingpads, and short median caudal filament. This species appears restricted to the interior low plateau of Tennessee and was usually found with the rarely collected mayfly species, *Paraleptophlebia kirchneri*.

Examination of a large number of specimens recently collected from Tennessee revealed a previously unrecognized species of the small minnow mayfly genus *Plauditus* Lugo-Ortiz and McCafferty (1998). This species is described below as *P. grandis*, in reference to the species comparatively large size among *Plauditus* species.

### ***Plauditus grandis*, NEW SPECIES**

**Larva.** Body length: 6.8-8.2 mm, cerci 4.5-5.0 mm. Head: Head capsule with median rows of short, transverse dashes on each side of the medial trunk of the epicranial suture. Labrum as in (Fig. 1) with paired submedial and 6-10 sublateral setae. Maxillae robust and with 2-3 crest setae; palpi two segmented and extending to the galealacinial crest, segment 1 subequal to segment 2. Right mandibular incisors as in Fig. 2. Left mandibular incisors as in Fig. 3. Segment 3 of labial palpi (Fig. 6) narrow, with very slight distolateral point and evenly rounded to weakly concave distal margin; segment 2 with 5-6 dorsal setae. Thorax: Nota of male and female larvae chocolate brown in color with scattered pale and dark areas. Leg coloration and setation similar to (Fig. 5); femora with numerous robust seta adjacent to distal margin and all segments with numerous surface setae. Tarsal claws (Fig. 4) robust and with 11-17 denticles, basal two small. Abdomen: Tergal patterning of mature male larvae usually similar to (Fig. 10); terga of female larva uniform chocolate brown with pale sublateral spots anteriorly and narrow, medial, pale stripe. All terga in both sexes with paired, submedial brown spots, may be difficult to discern. Posterior marginal spines of middle and posterior terga large and rounded apically (Fig. 7). Sterna 2-9 with paired submedial brown spots, submedial oblique markings anteriorly and sublateral brown dashes anteriorly and medially. Gills elongate and symmetrical. Median caudal filament short, about equal in length to basal width of cerci. Cerci with wide band of darkened segments located distal of the midlength.

**Male adult.** Body length: 7.8-8.2 mm, forewings 6.2-6.6 mm. Head: Dark brown in color; ocelli encircled in medium to dark brown basally. Antennal scape, pedicel and flagella dark to medium brown. Turbinate eyes large with pale orange-brown upper

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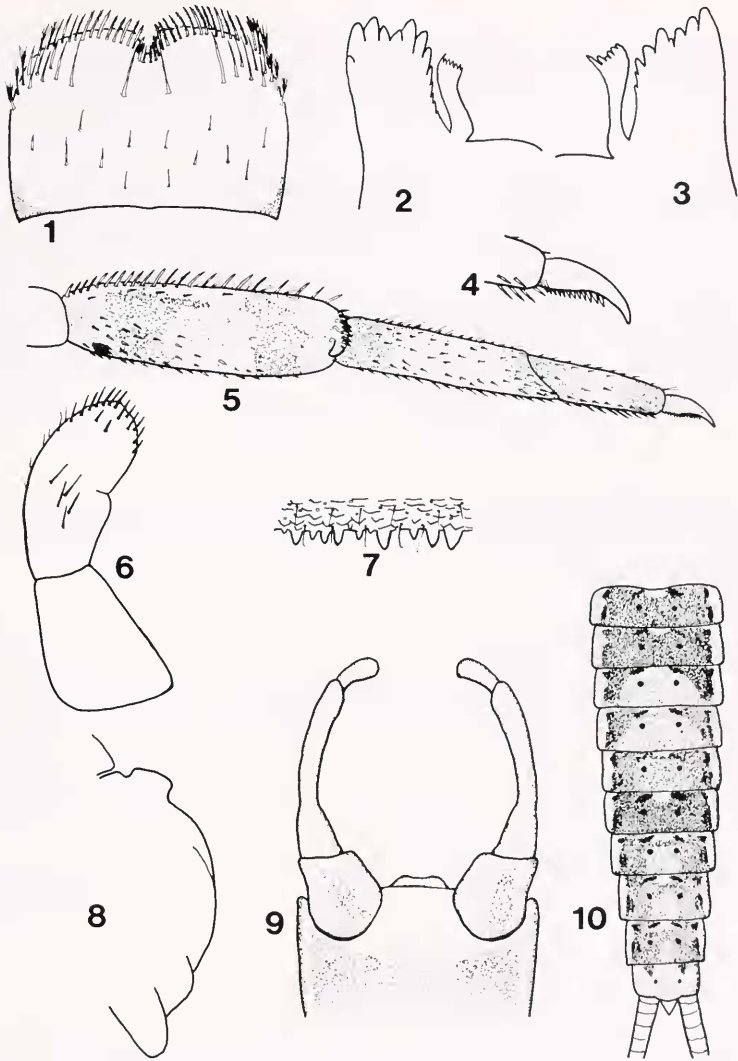
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portions and red-brown lower stalks. Thorax: Notae and sterna dark brown with highly contrasting paler areas around sutures; pleura with less extensive dark areas. Anterior process of mesoscutum dorsally oriented with weakly rounded to truncated anterior margin, and moderately to well developed dorsal point usually similar to Fig. 8. Forewings with light brown colored venation, relatively long double marginal intercalaries and often with brown pigmentation in the stigmata area. Forefemora dark brown, tibia paler than tarsi; mid- and hindlegs medium to light brown. Abdomen: All segments medium chocolate brown, posterior segments more intense in color. Sternum 9 with lateral triangular brown markings (Fig. 9). Genitalia as in Fig. 9, with near cylindrical basal forcep segments and segment 3 weakly expanded distally; basomedial process weakly sclerotized and with shallow to deep posterior emargination. Caudal filaments light brown.

**Material.** HOLOTYPE: Male adult with larval and subimaginal exuviae, TENNESSEE: Rutherford Co., Middle Fork Stones River at Hwy 269 & Short Creek Church, March 21, 1997, L.S. Long (deposited in the Purdue Entomological Research Collection, West Lafayette, Indiana). PARATYPES: 3 male adults with larval and subimaginal exuviae, two exuviae and one genitalia slide mounted in Euparal, same data and deposition as holotype; 1 male and 1 female larvae, TN: Rutherford Co., Dry Fork Creek at Brothers Rd., March 21, 1997, L.S. Long, same deposition as holotype; 1 reared male and 3 larvae, TN: Williamson Co., South Prong Spencer Creek at Liberty Pike and Jordan road, February 19, 1997, L.S. Long, deposited in Florida A&M Entomological Collection. Additional material: TN: Rutherford Co., West Fork Stones River at Panther Creek, March 14, 1998, L.S. Long (female larva in personal collection of NAW); Middle Fork Stones River at Hwy 41 and Hoover's Gap Church, March 21, 1997, L.S. Long (male larva, NAW); Middle Fork Stones River at Lynch & Pruitt, March 14, 1998, L.S. Long (larva slide mounted in CMCP-10, personal collection of LSL).

**Diagnosis.** Larvae of *P. grandis* are distinguished from all other *Plauditus* species on the basis of their large size; highly distinctive leg coloration and setation; short median caudal filament; narrow labial palpi; tergal and sternal coloration as well as numerous additional features found in the above description. *Plauditus cingulatus* (McDunnough) larvae also have a short median caudal filament similar to *P. grandis*, but are otherwise distinguished by the above features. *Plauditus grandis* males may be confused with *P. futilis* (McDunnough) on the basis of coloration features (abdominal terga olive-brown to clay colored) used in past descriptions and characterization (McDunnough, 1931; Traver, 1935; Jensen, 1969). However, *P. futilis* adult males are smaller in size; have a darkened quadrate-shaped median process between the basal forcep segments without an emarginate posterior margin; longer more robust terminal forcep segments (3.0-3.5 X as long as basal width); and overall paler coloration. Additionally, this is a western species with its eastern limit in the central Hill Country region of Texas and *P. grandis* is likely endemic to Tennessee or the central highlands of the southeastern United States. The coloration and morphology of the male genitalia and sternum 9; large size; overall chocolate brown coloration; and lack of hindwings should distinguish males this species from all known *Acentrella*, *Heterocloea* and *Plauditus* species.



Figs. 1-10. *Plauditus grandis*, n. sp., 1-7, 10 Larva. 1. Labrum (dorsal view). 2. Right mandibular incisors. 3. Left mandibular incisors. 4. Tarsal claw (enlarged). 5. Leg 6. 6. Labial palp (dorsal). 7. Medial posterior margin of abdominal tergum six. 8-9 Adult male. 8. Partial thorax (oriented at 90° angle). 9. Genitalia (ventral). 10. Male larval tergal patterning.

**Remarks.** The type locality, Short Creek, is a small 2nd order bedrock stream of the Stones River Drainage and is located in the Central Basin of the interior low plateau region of Tennessee. Larvae were collected from clumps of submerged grass along the stream margin at the type locality and from macrophyte beds in shallow run habitats of 1st to 4th order streams within the drainage. *Plauditus grandis* and *Paraleptophlebia kirchneri* Kondratieff & Durfee seem to be endemic to this region and were the only mayfly species collected from temporary streams of the Stones River Drainage. In addition to *P. kirchneri*, *Acentrella ampla* (Traver), *A. turbida* (McDunnough), *Diphetero hageni* (Eaton), *Eurylophella temporalis* (McDunnough), *Plauditus veteris* (McDunnough), and *Stenonema femoratum* (Say) were collected with *P. grandis* from other locations. Based on collection records, emergence would appear to be restricted from February through April.

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#### LITERATURE CITED

- Jensen, S.L.** 1969. A new species of *Pseudocloeon* from Idaho (Ephemeroptera: Baetidae). Pan-Pac. Entomol. 45: 14-15.
- Lugo-Ortiz, C.R., and W.P. McCafferty.** 1998. A new North American genus of Baetidae (Ephemeroptera) and key to *Baetis* complex genera. Entomol. News 109: 345-353.
- McDunnough, J.** 1931. New species of North American Ephemeroptera. Can. Entomol. 63: 82-93.
- Traver, J.R.** 1935. Part II. Systematic, pp. 239-739 In: J.G. Needham, J.R. Traver and Y.C. Hsu [eds.], The biology of mayflies with a systematic account of North American species. Comstock Publ. Co., Ithaca, New York.

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#### BOOKS RECEIVED AND BRIEFLY NOTED

A REVISION OF THE GENUS *Theope*: ITS SYSTEMATICS AND BIOLOGY (Lepidoptera: Riodinidae: Nymphidiini). 1999. Jason P.W. Hall. Scientific Publishers, Gainesville, FL. 127 pp. 10 color plates. 8½ x 11. Paper. \$32.50.

A thorough study of the complex Neotropical metalmark butterfly genus *Theope*. Included are descriptions of all species, distribution maps, illustrations of genital characters, keys to species, and notes on biologies. Two new species and two new subspecies are described: 15 lectotypes are designated. The 10 color plates illustrate all species.